UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
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SFD 8-3

November 7, 2006

Mr. Thomas Macchiarella, Code 06CA.TM
Department of the Navy
Base Realignment and Closure
Program Management Office West
1455 Frazee Road, Suite 900
San Diego, CA 92108-4310

RE: **Draft Remedial Investigation/Feasibility Study Report IR Site 35, Areas of Concern in Transfer Parcel EDC-5, Alameda Point**

Dear Mr. Macchiarella:

EPA has reviewed the above referenced document, prepared by Bechtel Environmental, Inc and submitted by the Navy on July 17, 2006. The document contains the results of recent additional sampling performed on portions of Transfer Parcel EDC-5 and presents a comprehensive discussion of contaminants of concern, nature and extent of contamination and potential associated risk. A number of remedial alternatives are also evaluated. The document is well written and nicely organized and provides excellent summaries of the contamination found at each area of concern and comparisons of the contaminant levels to the screening criteria.

There are a few major issues in the document that need significant revision, although the decision on whether to carry an area of concern into the FS is not necessarily affected by these revisions. The issues that need rewriting relate to the designation of groundwater as a potential drinking water source; the discussion of metals above background; the presentation of total risk in addition to incremental risk; the presentation on portions of the risk assessment process; and the need for ICs beneath existing buildings as part of the remedial alternatives dealing with PAH contamination. A detailed discussion of the problems associated with each of these issues can be found in our enclosed comments.

Thank you for working in collaboration with the regulators over the past year to address the many outstanding issues that remained at EDC-5, and for submitting such a well thought out RI/FS. We look forward to resolving the final issues outlined in our comments. Please call me at (415) 972-3029 if you have any questions.

Sincerely,

Anna-Marie Cook

Anna-Marie Cook
Remedial Project Manager

enclosure

cc list: Frances Fadullon, BRAC PMO SW
Dot Lofstrom, DTSC Sacramento
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EPA Review of Draft Remedial Investigation/Feasibility Study Report IR Site 35, Areas of Concern in Transfer Parcel EDC-5, Alameda Point

General Comments

1. **Groundwater Designation:**
Please note that the groundwater beneath IR35 meets the federal criteria for a potential drinking water source. EPA has stated that in some areas, specifically those west of Saratoga Street (which coincides with the Regional Boards local dedesignation), MCLs do not necessarily apply as ARARs for CERCLA cleanup purposes when compelling site specific circumstances are taken into account. However the portions of groundwater in IR35 east of Saratoga are subject to MCLs as ARARS. Please revise the discussion on groundwater to accurately reflect the status of the groundwater as a potential, although possibly unlikely, source of drinking water.

2. **Metals above Background:**
EPA did not accept the use of the LBNL study for background inorganic concentrations in soil for IR30 FS and IR 35RI when the argument used was that the Alameda Point background data set was not representative of soil conditions east of Main Street. There is even less justification for using the LBNL as a comparison for soil west of Main Street where property was included as part of the background data set. All inorganics should be screened against residential PRGs and the Alameda Point "pink" background data set. Please delete all references and comparison to the LBNL study from this document.

3. **Total vs Incremental Risk:**
Total risk, including the risk contributed by metals at and below established background levels for Alameda Point must be presented in the text for all AOCs. A major factor in determining whether remedial action is warranted for sites with risks falling within the risk management range is the contribution of risk from background metals to the total risk. Therefore a comparison of total and incremental risk is critical to understanding the risk drivers at a site. Total risk has not been included in the text for any AOCs and so a critical part of the risk assessment is missing when reading the document. Please revise the risk presentation in Sections 6.3 and 6.4 and related sections in other portions of the document so that total risk and incremental risk are both presented This revision may necessitate taking additional AOCs, where the total risk is above 1×10^{-4}, into the FS for evaluation for remedial action.

4. **ICs for PAHs under Housing:**
The nature and extent, risk assessment and development of remedial alternatives failed to take adequately into account that PAHs beneath existing houses and buildings are likely to be present at pre-TCRA levels. ICs or some other remedy will be necessary to ensure

that exposure to the soil beneath the houses does not occur. Please revise the remedial alternatives to address this issue.

5. **Human Health Risk Assessment**:
The different types of risk evaluations were not defined in the RI/FS. Appendix J includes the results of three types of risk evaluations: Tier 1 evaluations, baseline human health risk assessments (BHHRA), and lead evaluations. (An evaluation of PAHs was conducted separately and is included in Section 6 of the main document and in Appendix I.) In the Appendix J evaluations, individual sites were evaluated using one of the three different approaches mentioned above, but the rationale for selection of one screening assessment versus another has not been clearly described. It is understood that the lead evaluations were carried out at only two sites at which lead removals were conducted. However, the use of a Tier 1 evaluation versus a BHHRA has not been clearly described. Page J-1 notes that "Tier 1 evaluations were conducted for 14 study areas where inspection of the analytical results indicated that decisions on whether remediation is warranted could be made based on the results of a Tier 1 approach." The criteria used for making these decisions should be stated. Please revise Appendix J to clearly describe the criteria used to select the need for a Tier 1 evaluation versus a BHHRA at a given site.

The summary tables of the Tier 1 evaluations for each site generally lack a level of detail necessary to support an understanding of the data evaluated for each site. The tables, such as Table J2-1 for AOC 2, only present the maximum concentration for each detected analyte. The table does not summarize the number of samples evaluated for each analyte, the detection frequency, the range of detects, or the location at which the maximum concentration was detected. This information is important since in some cases, it is used to support the conclusions drawn. For example, the AOC 2 Tier 1 Conclusions indicate that a majority of the cancer risk at this site is associated with Aroclor 1260, "which had a low detection frequency." Without providing documentation to show that Aroclor 1260 had a low detection frequency, this conclusion is unsupported. Please update the Tier 1 evaluation summary tables to provide more detail with respect to the data that were used in the evaluation. At a minimum, the tables should summarize the number of samples evaluated for each analyte, the detection frequency, the range of detects, and the location at which the maximum concentration was detected.

Specific Comments:

1. **Page 1-17, Section 1.6.1:** Please clarify the statement "...pesticides were not reported". Since the TCRA was designed to remove primarily pesticides, and lead and PCBs were added in once they were found to exceed residential PRGs in the soil, confirmation sampling should have verified that the pesticides had been adequately remediated through soil removal.

2. **Page 1-18, Section 1.6.2.2:** There are additional VOCs in groundwater besides those stated in this section, e.g. TCE, DCE and VC.

3. **Page 1-18, Section 1.6.2.3, last sentence:** Please revise this sentence to more accurately state that removal actions are ongoing for clean up of the DNAPL portion of the groundwater plume and that the majority of the radiological constituents in the storm drains have been removed or cleaned. The remediation is in no way complete for the groundwater and radiological contaminants and will not be considered complete until the remedial action report is drafted.

4. **Page 1-19, Section 1.6.2.4:** Update the status of IR06 to include the fact that the Record of Decision selects limited excavation of soil and ISCO, Bioremediation and MNA with ICs for groundwater as the remedy for the site.

5. **Page 1-19, Section 1.6.2.5:** Please include information about the former incinerator at the IR07 and describe the metal debris area and the associated COCs.

6. **Page 1-19, Section 1.6.2.6**: Suggest stating that the COCs in groundwater have decreased to below MCLs.

7. **Page 1-20, Section 1.6.2.10**: Please update the description of IR26 to state that the Record of Decision has been finalized selecting no remedial action for soil and ISCO for remediation of groundwater contamination.

8. **Page 1-21, Section 1.6.3.4**: Please mention that an incinerator was formerly located at this area. Cadmium should be added to the list of COCs in soil and arsenic should be added to the list of COCs in groundwater.

9. **Pages 3-6, 3-7, Section 3.4**: This section presented a very well written, concise and easily comprehensible summation of the data quality process used for IR35.

10. **Page 4-1, second paragraph**: Please delete the reference to local rocks. As we have stated in our comments on IR 30 FS and IR 31 RI, EPA's does not accept the validity of the comparison and it is not necessary to include it in the IR35 RI/FS.

11. **Page 4-1, Section 4.1.1**: Since the vinyl chloride in soil appears to responsible for the hit in the groundwater directly beneath, is there any speculation on what the original source of the VC could be? Could there be a leaking sewer above the groundwater at this location?

12. **Page 4-3, Section 4.1.3**: It would be helpful to state that the 57 soil borings taken in the 0 - 2 feet bgs depth were between 0.62 mg/kg and 1.0 mg/kg following the TCRA. As written, the results sound unnecessarily alarming.

13. **Page 4-4, Section 4.1.4.1, first paragraph**: State that neither the distribution nor the concentration of heptachlor indicate a routine application.

14. **Sections 4.1 and 4.2** are very well written and informative. Giving all the concentrations along with the PSCs is extremely helpful.

15. **Section 4.2.5, Metals, Page 4-12:** Data that support the interpretation that high concentrations of dissolved metals in groundwater are associated with pH and anaerobic conditions at AOC 5 have not been provided. Please provide data to support this conclusion and a more detailed explanation.

16. **Section 4.3.1.2, Correlation of Concentrations in Fill Soil With Off-Site Sources, Pages 4-17 through 4-19 and Table 4-14, Typical Concentration of Selected Metals in Rocks:** The text states that a comparison of typical metals concentrations in common rock types with the concentrations at IR Site 35 "supports the conclusion that metals identified at IR Site 35 (with the exception of lead at AOCs 10 and 12) are likely the result of natural processes rather than site-related activities," but an examination of Table 4-14 reveals that there is no consistent relationship between typical metals concentrations in the various rock types, an average concentration, or the median from the Lawrence Berkeley National Laboratory (LBNL) study and the median at IR Site 35. In some cases, the typical concentrations in granite most closely match those at IR Site 35, in others, the closest match is to sandstone, limestone, or shale. In addition, there is no correlation between IR Site 35 concentrations and the LBNL median concentrations; in most cases, the LBNL concentrations are higher by a factor of 2 or 3. Please delete this section of text.

17. **Page 5-5. Section 5.1.2.2, first sentence after bullets**: This sentence is confusing in that the previous section has already stated that AOCs 4, 5, 9, OWS 17, and ASTs 016, 039 and 392 had no impact on soil. It would be expected that there would be no impact on groundwater beneath these particular areas and so use of the phrase "in contrast" is puzzling. Please clarify and reword.

18. **Page 5-15, Section 5.2.2 sentence after first set of bullets**: It would be helpful to state how these metals compared to Alameda Point background concentrations.

19. **Page 6-5, Section 6.1.2.5, third paragraph**: The statement that in the future it is unlikely that individual homes would have sufficient space to produce a family's supply of fruits and vegetables is unwarranted. Currently, families on IR35 property do grow their own supply of fruit and vegetables and the Alameda Homeless Collaborative has an agreement with the City of Alameda to be able to continue to do so for the next 50 years. The ingestion of homegrown produce is therefore a very valid current and future exposure pathway.

20. **Page 6-6, Section 6.1.2.5, first bullet**: The first sentence in this bullet seems contradictory. IR35 is part of Alameda Point and the background data included samples taken from EDC-5.

21. **Page 6-7, second paragraph, bullets and paragraph following bullets**: The first four bullets do not follow from the preceding sentence since the sentence relates to groundwater use and the bullets relate to soil exposure pathways. The sentence following the bullets does not follow. Recommend deletion of the last sentence and revision of the sentence preceding the bullets.

22. **Page 6-9, Section 6.1.3.5, last paragraph**: Revise second sentence to read "Only EBS Parcel 205 is in an area...". Delete the third sentence since groundwater beneath IR35 does qualify as a potential source of drinking water under federal criteria and that status will not change.

23. **Page 6-10, first full paragraph**: Please delete this paragraph. Not only is it conjecture, but the current scenario and future scenario do have a significant number of residents growing their own food and cultivating a gardening nursery for commercial use.

24. **Page 6-10, Section 6.3, first and second bullets**: Do the Exposure Groups 1 and 2 include ingestion of homegrown produce? It should be included.

25. **Page 6-15, Section 6.4.1**: Two cancer risks (EPA and Cal-EPA) are listed for two groups (Exposure Group 1 and Exposure Group 3). Therefore four risk numbers should be presented in the first paragraph in this section. However, only two risk numbers are given and it is not possible to know what they represent. Please revise. The same problem appears in Section 6.4.3, 6.4.4, and 6.4.5.

26. **Page 6-15, Section 6.4.2**: Please remove the assertion that a future garden is unlikely to be part of this property. Since AOC 3 has been taken into the FS for remedial action, unsubstantiated speculation on future gardening activities does not assist in the decision making and implies that some sort of restriction on gardening activities may be needed.

27. **Page 7-7, first paragraph**: Please delete this paragraph. The groundwater beneath AOC 23 meets the federal definition for a Class II aquifer and as such the groundwater is a potential source of drinking water.

28. **Page 7-7, second paragraph**: The first sentence in this paragraph is contradictory since total risk would include background metals. What is presented here is the incremental risk; the total risk would be even higher. Also, since the PCB hits account for such a high cancer risk and HI number, the assertion that the concentrations are an artifact of sampling needs more support than is given.

29. **Page 7-8, third bullet**: Given that PCBs and PAHs account for the majority of the risk in groundwater, it would seem prudent to propose resampling during the remedial action to verify the assumption that the PCB and PAH hits are an artifact of previous sampling.

30. **Page 7-8, last bullet**: Clarify that the PAHs *in soil* are addressed as part of the PAH Areas since the PAH hits in the groundwater are not being addressed.

31. **Page 7-9, Section 7.1.6**: As mentioned in the General Comments, soil beneath existing buildings needs to be addressed in the remedial alternatives evaluated for PAH contamination.

32. **Page 7-10, Section 7.2.1, fourth paragraph, first sentence**: Please clarify where the arsenic is found, i.e. soil, groundwater or both.

33. **Page 7-12, Section 7.2.3, third paragraph and second bullet on page 7-13**: Please delete this paragraph and the bullet. Groundwater in this location is not exempted and meets the federal criteria for a potential source of drinking water.

34. **Page 7-15, Section 7.2.7, third paragraph**: Please note that the background risk attributable to arsenic is approximately 2×10^{-5} (see OU 1 RI and FS) and not 9×10^{-5}. Arsenic appears to be present at levels above the Alameda Point background value of 9.1 mg/kg. Please provide more information to support the claim that arsenic at this AOC is present at levels below the Alameda Point background.

35. **Page 7-16, third paragraph**: Please delete this paragraph.

36. **Page 7-16, fourth paragraph**: Why is the TCE in groundwater and associated inhalation threat not discussed in the Human Health Risk Assessment presented for this AOC in Section 6.4.3 or stated in the second paragraph on page 7-16? Given that this area is used for residential purposes, including day care, it is extremely important to discuss the significance of this contaminant and the potential exposure pathways, and also to provide satisfactory justification for not remediating the contaminant. Additionally, the groundwater ingestion pathway needs to be considered a potentially complete pathway.

37. **Page 7-17, second bullet**: What about the TCE hit? Please provide more information.

38. **Page 7-17, third bullet**: It is not appropriate to delete background metals from total risk and then claim that since the incremental risk is within the risk management range, no further action is recommended. Total risk needs to be presented and then the risk managers can ascertain, if the risk is within the risk management range, whether remedial action should be evaluated.

39. **Page 7-17, fourth bullet**: Please delete this bullet.

40. **Page 7-17, Section 7.2.9, third paragraph**: As previously mentioned, the background risk for arsenic is 2 x 10^{-5}, so the risk at this AOC for arsenic of 1 x 10^{-4} appears above background. Please provide support for stating that arsenic is below Alameda Point background levels, where the concentration limit for clean up has been set at 9.1 mg/kg.

41. **Page 7-19, Section 7.2.11, fourth paragraph**: Please provide a reference for the stated groundwater concentration for protection of indoor air of 3200 µg/l.

42. **Page 7-22, Section 7.2.14, second, fourth and fifth paragraph**: Please provide more support for the statement that arsenic and iron, while above background, are believed to be naturally occurring. Simply making the statement is not sufficiently convincing.

43. **Page 9-1, Section 9.1.1, third bullet, second sentence and Page 9-2, Section 9.1.2, fifth bullet**: Please note that the preference is for reduction of mobility, volume or toxicity through treatment. Containment would not provide treatment.

44. **Section 9.3.1.1, Effectiveness, Page 9-4:** The criterion in bullet 2 is the reduction of toxicity, mobility, or volume (TMV) *by treatment*, not just the reduction of TMV. Please revise the text of bullet 2 to clearly state that technologies that reduce TMV *by treatment* are preferred.

45. **Table 11-4: Detailed and Comparative Analysis of Soil Remedial Alternatives at AOCs 10 and 12 by Balancing Criteria; Table 11-5, Detailed and Comparative Analysis of Soil Remedial Alternatives for PAH Areas by Balancing Criteria:** The evaluation of the reduction of TMV through treatment for AOC 10/12-2, PAH-2, PAH-3a, PAH3b, PAH4a, and PAH4b, indicates that pavement would reduce the mobility of the contaminants in affected soils under the pavement, but pavement is not considered treatment.

46. **Table 11-13, Detailed and Comparative Analysis of Groundwater Remedial Alternatives at AOC 1 by Balancing Criteria and Table 11-17, Detailed and Comparative Analysis of Groundwater Remedial Alternatives at AOC 23 by Balancing Criteria:** The evaluation of the reduction of TMV through treatment for alternatives AOC 1-1 and AOC 23-1 should not state that some reduction of naphthalene or vinyl chloride concentrations would occur since there is no way to verify this in the no action alternative. Therefore, it cannot be concluded that this reduction occurs and this criterion should be scored "low."

47. **Appendix H, Background Comparison, Figures H2 through H20, Correlation of metals plots:** It should be noted in the text that each of these plots has a different scale. The differing scales can be misleading when using them to evaluate the relationships

between any one metal and each of the other metals. Please indicate in the text that each of these plots has a different scale and that the x and y-axes also do not have a common scale.

Also, the r squared value for each of the trend lines should be listed on the plots; without a record of the r squared values and the variable scales it is not possible to evaluate the significance of the metals correlation results. Please proved the r squared value for each of the plots.

48. **Appendix L, Table L-15, AOC 1, Cost Estimate Assumptions for Groundwater Alternatives and Table L-15, AOC 23, Cost Estimate Assumptions for Groundwater Alternatives:** The basis for the assumption that MNA will be complete in 10 years is not presented. Please explain the basis for this assumptions.

Similarly, the basis for the assumption that a single round of in-situ chemical oxidation (ISCO) would be sufficient is not explained. Please provide the technical basis for the assumption that a single round of ISCO would be sufficient.

49. **Attachment D, Section 1.5, Adjacent Site, Page D6-1; and Section 5.3, Contaminant Migration, Page D5-3:** The discussion of adjacent sites is limited to IR Site 28; however, results of sediment sampling at IR Site 20 should also be discussed to support the conclusion that contaminant migration by surface water runoff is unlikely. For example, storm water runoff from of AOC 4 discharges to IR Site 20 at Outfall E or by overland flow from the portion of EBS Parcel 62 within AOC 4. Please revise Section 1.5 of Attachment D to include a brief discussion of sediment results from IR Site 20.

50. **Attachment D, Table 3-1, Sample Analysis Summary, AOC 4:** The presentation of metals analyses could be improved. For example, the table does not distinguish between samples analyzed for the full suite of metals (4 samples from MBG-1), and those analyzed for arsenic only (7 samples). Please revise the table to identify samples that were analyzed for arsenic only.

51. **Attachment E, Section 5, Conceptual Site Model, Page E5-1; Attachment E, Section 4.2.4, Metals, Page E4-3; and Attachment E, Section 6.2 Risk Characterization, Page E6-1 and E6-2:** The interpretation that high concentrations of dissolved metals in groundwater are associated with pH and/or anaerobic conditions does not present any water quality parameter data in the discussion. If available, please provide water quality parameter data (i.e., pH, dissolved oxygen [DO] and Oxidation Reduction Potential [ORP]) to support this interpretation.

52. **Attachment G, Section 1.4.2, PAH Removal Action, Page G1-3:** The discussion of soil removals does not include the depth of the excavations. In addition, it may not be clear to the public if the soil removal addressed contaminants other than PAHs because the

discussion in the first paragraph indicates that twelve samples collected during the Time Critical Removal Action (TCRA) were analyzed for VOCs, Total Petroleum Hydrocarbons (TPH), PAHs, Pesticides, PCBs, and metals. The first paragraph further indicates that only results from soil samples not excavated during the TCRA were reviewed for this report, but it is not clear if there are samples that were collected beneath the excavations that are included. Please revise the text to include the depths of the excavations, to clarify whether the TCRA addressed contaminants other than PAHs and to clarify whether data collected from samples deeper than the excavation depth are included in this RI Report.

53. **Attachment H, Section 1.2, Historical Use, Page H1-1:** The report does not describe the current land use of AOC 8 as a community garden or identify the period of time that AOC 8 has been used and is planned for future use as a community garden. Please describe the current and future land use (including dates) in Section 1.2 of Attachment H.

54. **Attachment I, Figure 1-1, Study Area and Sampling Location, AOC 9:** The assumed location of the former grease trap at AOC 9 is not identified on Figure 1-1. Please include the location of the former grease trap on Figure 1-1.

55. **Attachment R, Section 7.2, Conclusions and Recommendations, Pages R7-4 and R7-5:** Data (i.e., groundwater turbidity data) have not been provided to support the interpretation and conclusion that PAHs and PCBs reported in groundwater at AOC 23 are associated with suspended material due to turbidity.

56. **Attachment T, Section 7.2, AOC 25 Conclusions and Recommendations, Page T7-2:** Data to support the interpretation that high concentrations of arsenic, iron, lead, and manganese in groundwater are associated with reducing conditions has not been included. Please provide water quality parameters data (i.e., pH, dissolved oxygen [DO] and Oxidation Reduction Potential [ORP]) to support this conclusion.

57. **HHRA**: Section 6 of the main RI/FS document notes that risks for PAHs have been divided into pre-TCRA PAH risks and post-TCRA PAH risks. The calculations for the pre-TCRA PAH risks are presented in Appendix I, but the calculations for post-TCRA PAH risks apparently have not been provided, even though a summary of the results is presented as Table 6-2 of the main document. Please provide the risk calculations for the post-TCRA PAH results.

58. **Section J1.2.3, Calculation of Cancer Risk and Noncancer Hazard Values, Page J-3.** Cancer risk and noncancer hazard values for the Tier 1 data evaluations were calculated for three separate exposure groups, one of which is exposure pathways for soil and vapors from volatile organic compounds (VOCs) in groundwater (Exposure Group 2). However, it does not appear that a quantitative evaluation of VOCs in groundwater was included in the Exposure Group 2 calculations for most of the individual sites. For

example, the results for AOC 2 for Exposure Group 2 (exposure pathways for soil and vapors from VOCs) are presented in Section J2.1.3, but the cancer risk and noncancer hazard values do not actually include potential inhalation risks/hazards attributable to volatilization of VOCs from groundwater. Since inhalation of VOCs stemming from groundwater was not actually included in the Exposure Group 2 calculations of risk/hazard, it should be removed from explanation of the exposure group and evaluated exclusively in the uncertainty analysis.

Comments from EPA's Office of Regional Counsel:

1. **Page 9-6, Sec. 9.3.2.2.** The document states, "ICs might also be effective as an interim strategy to ensure the effectiveness of other remedial process options by preventing disturbance of portions of the remedy (e.g., pavements or soil covers) ... until site redevelopment occurs or cleanup goals are achieved." This implies that ICs to protect the integrity of a landfill cap are an interim remedy and would go away once the active remediation has been accomplished. This is misleading, as ICs to protect the integrity of a landfill cap must be maintained in perpetuity unless a subsequent determination is made that the property is suitable for unrestricted use.

2. **Page 10-3, Sec. 10.2.2.** Soil alternatives involving cover and ICs – pavement maintenance issues.
(a) Requiring pavement to be maintained is a type of IC and should be described as such in the document.
(b) The document in the first whole sentence on p. 10-3 states that existing pavement would be maintained until redevelopment, at which time the transferee would be responsible for pavement removal and excavation of underlying lead-impacted soil. This is confusing. It suggests that eventual removal of pavement and excavation of soil underneath is part of the remedy. The discussion of remedy AOC 10/12-2 in Sec. 11, however, does not include removal of pavement and excavation as part of the remedy. It may be that the Navy's intent is that pavement maintenance will be required as an IC but that the IC could be lifted if the transferee chooses to remove the pavement and excavate the underlying soil pursuant to an enforceable agreement with EPA and the State. This should be clarified.

3. **Page 10-7, Sec. 10.3.5, GW remedies, ISCO**. This discussion indicates that "a 2-year duration is assumed" and that ICs are assumed not to be required for this alternative. This suggests that interim ICs are not necessary for an active remedy that will take two years. However, page 11-43 suggests that the ISCO is expected to achieve RGs within 6 months, and that it is monitoring that is expected to last 2 years. EPA recommends that this be clarified in Sec. 10.3.5.

4. **Page 11-9, Sec. 11.2.2.4, AOC 3-2, soil cover, reviews and reporting**. In the last sentence of Sec. 11.2.2.4, the document states that comprehensive reviews of the ICs

would be performed every 5 years. However, EPA considers it necessary to review the effectiveness of the ICs at least every year. Additionally, the document states that for the purposes of the RI/FS, the project life is defined as 30 years. This also presents a problem with regard to ICs, as it must be assumed that the ICs are in place in perpetuity. We have the same concerns regarding other sections discussing reviews and reporting on IC effectiveness.

5. **p. 11-12, sec. 11.3.1.1, and p. 11-19, sec. 11.4.1.1.** These two sections analyze the no-action remedy for AOC 10/12 and PAH areas as to the first criterion, overall protection of HH and the environment. In both cases, the Navy concludes that the no action alternative may meet this threshold criterion by taking into consideration anticipated soil surcharge during development. However, it is not appropriate to consider the possible soil surcharge in analyzing the protectiveness of any remedy unless adding a soil cover is considered to be an element of the remedy. Obviously, with a no-action remedy, this is not the case. Also, how can the no action alternative be considered protective for the PAH areas when "time until protection is achieved is indefinite" (p. 11-50, sec. 11.7.3.5)?

6. **p.11-22, sec. 11.4.3.2, pavement maintenance**. The document states that the pavement maintenance activities are assumed to continue over a period of 30 years. While that may be a reasonable assumption for costing purposes, no reason is given why the pavement maintenance activities will not have to continue in perpetuity. If there are actual reasons, other than costing, that they may last only 30 years, that should be explained.

7. **Page 11-52, Sec. 11.7.4.4.**, how can no action be considered "medium" in terms of reduction of toxicity, mobility, or volume through treatment when no action would be taken? We have the same concerns regarding the analysis for AOC 23 on page 11-54, sec. 11.7.5.4.

8. **Page 11-38, sec. 11.5.4.5.** The third paragraph states that there are no specific federal or state ARARs identified concerning injection of nutrients/adjuvants and/or chemical reagents into the groundwater. The discussion distinguishes RCRA Section 3020(a). However, it does not discuss the Underground Injection Control regulations. The FS should discuss whether UIC requirements are ARARs for the injection remedies at AOC 1 and AOC 23 (especially AOC 23, where the aquifer may qualify as an underground source of drinking water). See especially 40 CFR 144.12 (prohibits injection of a fluid containing "any contaminant" into a USDW); 40 CFR 144.3 (definitions, including "contaminant" and "USDW"); and 40 CFR 144.82 (injection can't otherwise adversely affect human health).

9. **p. 11-53, Sec. 11.7.5.1.** It is not appropriate to find that the no action remedy satisfies the threshold protectiveness criterion when MCLs are exceeded.

ARARs comments

10. **Page K2-1** states that GW beneath AOC 1 has been determined not to be potential drinking water because it is west of Saratoga Street. This is not an adequate analysis. The document needs to discuss whether this groundwater is considered potential drinking water for the purposes of CERCLA remediation under EPA's groundwater guidance. It either must show the groundwater can be classified as Class III under the groundwater guidance, or discuss site specific conditions, as has been done for other sites west of Saratoga Street (e.g. Site 26). There is some discussion of the Site 35 groundwater in the document in Sec. 2.7, but no specific discussion of AOC 1.

11. **Page K2-7, third paragraph**, is confusing. It is not clear whether or not the Navy considers the portions of the Water Code to be ARARs.

12. **P. K4-3, second full paragraph**. Please remove second full paragraph beginning with "U.S. EPA" and instead state that U.S. EPA considers Sections a, b, d and e of 22 CCR 67391.1 to be relevant and appropriate.

13. **P. K4-4, discussion of ISB and ISCO**. Please see comment above regarding UIC.

14. **Table K2-2, page 2 of 4, discussion of SWRCB Resolution 92-49.** Please add that USEPA considers subsection 92-49 (III) (G) to be an ARAR.

15. **Table K3-1, page 5.** Please state the reason the coastal zone is considered to include only areas within 100 feet of shoreline.

16. **NPDES requirements as potential federal ARARs for discharges to Bay**. Page K2-2 and K2-13 discusses CWA 301(b), best control technology and best available technology requirements, as chemical-specific ARARs.
(a) NPDES requirements may fit better as action-specific ARARs since they are activity-based.
(b) We agree with including CWA 301(b) as an ARAR and also recommend including the criteria and standards for imposing technology-based treatment requirements from 40 CFR Part 125, Subpart A. Technology-based effluent limitations will have to be developed using best professional judgment. (See discussion p. 3-7 and following in USEPA *CERCLA Compliance with Other Laws Manual*, EPA/540/G-89/006 (August 1988).
(c) Discharges to surface waters must meet not only the technology-based requirements from CWA 301(b), but also, if necessary, water quality-based effluent limitations (CWA 301(b)(1)(C)) and other substantive requirements from EPA permitting regulations in 40 CFR Parts 122-125. These should be included as ARARs. (Again, see EPA 1988.)

17. **ARARs table K4-2** includes the IC statutes but not the regulation. Please include the regulation and also please note in the ARARs table, as well as in the text discussed above, that U.S. EPA considers Sections a, b, d and e of 22 CCR 67391.1 to be relevant and appropriate.

Inconsistences and Errata:

1. **Section 2.3.1.4, Merritt Sand Formation, Page 2-3:** The last sentence of this section discusses the Bay Sediment Unit (BSU) rather than the Merritt Sand Formation. Please resolve this discrepancy.

2. **Section 2.5.1, Regional Hydrogeology:** The presentation of information in this section is inconsistent. Some sections provide the depth to water bearing zone and others provide the thickness. Neither is provided for the Bay Sediment Unit. Please revise the text to provide both the depth to the unit and the thickness of each unit.

3. **Figure 2-9, Geologic Cross Section F-F, G-G', H-H' and I-I'; Section 2.3.2, IR Site 35 Geology, Page 2-3 through 2-6; and Appendix D, Boring Logs:** According to boring logs A01SB01 and A01SB03, the BSU was encountered at AOC 1 at 5 ft bgs and 8 ft bgs, respectively; however, cross section F-F' depicts the BSU contact below 12 ft bgs (i.e., below the total boring depth) in the vicinity of these borings. In addition, the eighth paragraph of Section 2.3.2 states that the depth to the BSU is approximately 12 to 14 ft bgs at AOC 1. Please resolve these discrepancies.

   According to boring log 32EDC-5-32, the BSU was encountered at approximately 5.2 ft bgs adjacent to the southern boundary of AOC 2; however, cross section G-G' depicts the BSU contact at approximately 12 ft bgs in this area. Please resolve this discrepancy.

   According to Figure 2-1, the extreme southeastern corner of IR Site 35, including most of AOC 25, lies on dune sand (i.e., the Qds geologic unit). However, cross section I-I' indicates that AOC 25 is underlain by 7 to 10 feet of fill material. Please resolve this discrepancy.

   Cross section I-I' depicts the top of the BSU at eight feet above mean sea level (msl) in the vicinity of AOC 15 and Aboveground Storage Tank (AST) 152; however, according to Figure 2-3 this area was filled in 1930. In addition, stratigraphy in the vicinity of boring 32EDC-5-134 is not interpreted consistently between cross sections D-D' and I-I'. Cross section I-I', indicates that boring 32EDC-5-134 encountered the BSU at 4 ft bgs; however, top of the BSU is depicted below 8 ft bgs (i.e., total depth) at boring 32EDC-5-134 on cross section D-D'. Please resolve these discrepancies.

4. **Page 7-9, first paragraph**: Correct 1,000 mg/kg B(a)P equivalent to be 1.0 mg/kg B(a)P equivalent.

5. **Appendix L, Table L-17, Cost Estimate Summary for Alternative 1-3: Source Removal, Enhanced Aerobic ISB and ICs:** The cost of in-situ bioremediation (ISB) in Table L-17 ($213,000) appears to be different than costs calculated from the assumptions in Table L-15 (122,200 - based on 15,000 pounds at $8 per pound and transportation costs of $2,200). Please resolve this discrepancy.

6. **Appendix L, Table L-18, Cost Estimate Summary for Alternative 1-5: ISCO:** The cost of ISCO ($173,000) does not match the assumption of $100,000 in Table L-15. Please resolve this discrepancy.

7. **Appendix L, Table L-21, Cost Estimate Summary for Alternative 23-4: ISCO:** The cost of ISCO ($428,000) appears to be different than the assumption of $250,000 in Table L-19. Please resolve this discrepancy.

   In addition, it is unclear if "75,000 sf and 5,000 sf" implies that two rounds of injection will be necessary. Table L-19 indicates that a single round of ISCO injections is assumed. Please explain the quoted phrase and clarify if one round or two rounds of ISCO injections were costed in Table L-21. If two rounds were costed, please resolve the discrepancy between the assumption in Table L-19 and the costs in Table L-21.

8. **Attachment B, Section 6.2, Risk Characterization, Page B6-1 and B6-2; and Attachment B, Table 4-1, Concentration Ranges for Organic and Inorganic Analytes Reported in Soil, AOC 2:** According to Table 4-1, Aroclor 1260 was reported in four soil samples; however, the discussion of results in Section 6.2 indicates that Aroclor 1260 was reported 1 of 17 soil samples, and exceeded the PSC in 2 of 17 soil samples. Please resolve this discrepancy.

9. **Attachment C, Section 6.1, Contaminants of Potential Concern (COPC) Identification, Page C6-1; and Attachment B, Table 4-1, Concentration Ranges for Organic and Inorganic Analytes Reported in Soil, AOC 3:** According to Table 4-1 of Attachment C, Volatile Organic Compounds (VOCs) were not reported in soil at AOC3 (i.e., VOC analysis was not performed at AOC 3 [Table 3-1 of Attachment C]); however, the second paragraph of Section 6.1 of Attachment C states that nine VOCs were identified as COPCs in soil. In addition, although the text states that 8 SVOCs were present in soil, Table 4-1 indicates that 17 SVOCs were detected. For consistency, please revise the discussion of COPCs in to indicate that seventeen SVOCs and 7 Pesticides were identified as COPCS in soil at AOC 3.

10. **Attachment D, Section 1.4.2, 2002 Polynuclear Aromatic Hydrocarbon (PAH) Study, Page D1-6; and Attachment D, Figure 1-1, Study Area and Sampling Locations:** The discussion in Section 1.4.2 of Attachment D indicates that the PAH results for boring 32EDC-5-89 are shown on Figure 1-1; however, PAH results for 32EDC-5-89 can only be found in Table 4-3 of Attachment D. Please resolve this discrepancy.

11. **Attachment E, Section 4.1.4, Metals, Page E4-2:** The second paragraph states that iron and manganese were the only metals reported above PSC; however, the first paragraph states that arsenic was also reported above PSC. Please resolve this discrepancy.

12. **Attachment H, Section 4.3, TPH, Page H4-1:** The maximum concentration of TPH measured at AOC 8 and the PSC for TPH are incorrect; for example, the maximum concentration of TPH was 240,000 ug/kg, not 240 ug/kg. Please resolve this discrepancy.

13. **Attachment I, Section 1.4, Previous Investigations, Page I1-3:** The text in the last sentence of the first paragraph references AOC 8. Please revise the sentence to reference AOC 9.

14. **Attachment J, Figure 4-1, Soil Sampling Results for Analytes Above PSC - AOC 10:** Lead results and station ID numbers for SS-36B-SE50 and SS-36B-SW50 appear to have been transposed on Figure 4-1 of Attachment J. Please revise this figure.

15. **Attachment R, Section 4.2.1, VOCs, Page R4-7 through R4-9; and Attachment R, Table 4-10b, Groundwater Sampling Results, AOC 23 EBS Parcel 126:** 1,2-Dichloroethane (1,2-DCA) was reported at a concentration of 2.4 ug/L in monitoring well 398-MW1 during the RI (i.e., December 2005); however, the last bullet of the second paragraph states current sampling as part of the RI did not confirm the presence of VOCs above PSCs in well 398-MW1. Please address this discrepancy.

16. **Attachment W, Section 4, Nature and Extent of Contamination, Page W4-1:** The third sentence of the third paragraph states, "...during previous locations above the PAH Time Critical Removal Action (TCRA) removal action objective..." Please replace "during previous locations" with "during previous investigations".